

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listings of Claims:**

Claims 1-8: (canceled)

Claim 9: (previously presented) A method of forming a titanium layer on a substrate, the method comprising:

placing the substrate in a deposition chamber comprising a titanium sputtering target; and

after placing the substrate in the deposition chamber, introducing a quantity of hydrogen into the deposition chamber without providing power to the titanium sputtering target; and

sputter depositing the titanium target onto the substrate by physical vapor deposition of the titanium sputtering target by applying power to the titanium sputtering target under conditions wherein the atmosphere in the deposition chamber comprises hydrogen and wherein the hydrogen is activated, whereby the titanium layer has a preferred crystal orientation.

Claim 10: (previously presented) The method of Claim 9 wherein introducing a quantity of hydrogen comprises flowing a gas comprising hydrogen into the deposition chamber.

Claim 11: (previously presented) A method of forming a titanium layer on a substrate, the method comprising:

placing the substrate in a sputtering chamber comprising a titanium target;  
flowing a first gas comprising hydrogen into the sputtering chamber through a first gas injector;

terminating the flow of the first gas; and

after the flow of the first gas has been terminated, sputter depositing the titanium layer onto the substrate by applying power to the target and by providing a second gas in the sputtering chamber through a second gas injector, wherein the

hydrogen is activated and whereby the deposited titanium layer has a preferred crystal orientation.

Claim 12: (original) The method of Claim 11 wherein the first gas comprises argon and hydrogen.

Claim 13: (original) The method of Claim 12 wherein the second gas is an inert gas.

Claim 14: (original) The method of Claim 12 wherein the first gas injector is positioned proximate the target.

Claim 15: (original) The method of Claim 14 wherein the titanium target is planar and wherein flowing the first gas provides a quantity of hydrogen in the sputtering chamber that is at least  $0.5 \times 10^{-4}$  standard cubic centimeters of hydrogen per square centimeter of target surface area.

Claim 16: (previously presented) The method of Claim 11 wherein applying power to the target comprises providing a power density on the target of at least about 0.5 watt per square centimeter of target area.

Claim 17: (previously presented) The method of Claim 16 wherein applying power to the target comprises providing a power density on the target of between about 3 and about 8 watts per square centimeter of target area.

Claims 18-25: (canceled)

Claim 26: (currently amended) A physical vapor deposition ~~The process of Claim 25~~  
comprising:

placing a substrate in a physical vapor deposition chamber, said chamber  
comprising a titanium target;

causing hydrogen to be absorbed into the titanium target;

introducing an inert gas into the chamber;

igniting a physical vapor deposition plasma in the chamber, said physical  
vapor deposition plasma causing the hydrogen to be released from the titanium  
target and to attain a concentration of at least 0.1 molar percent in the chamber,  
causing the hydrogen to be activated, and causing a titanium layer to be deposited  
onto the substrate, said titanium layer having a <0002> crystal orientation;

depositing a titanium nitride layer on said titanium layer, wherein said titanium nitride layer ~~having~~ has a <111> crystal orientation; and  
depositing an aluminum layer on said titanium nitride layer.

Claim 27: (canceled)

Claim 28: (currently amended) The process of Claim 26 ~~27~~ wherein said aluminum layer has a <111> crystal orientation.

Claim 29: (currently amended) The process of Claim 26 ~~23~~ wherein said hydrogen is absorbed to a depth of about 50 Å into said titanium target.

Claim 30: (currently amended) The process of Claim 26 ~~23~~ wherein, after said hydrogen is released from said target, said hydrogen reacts with a species adsorbed in said substrate.